NEWSLINE

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Community leaders visit Lab

In the second annual Community Leader Day Thursday, Director Michael Anastasio welcomed approximately 150 enthusiastic community leaders representing local government, businesses and civic organizations from throughout the Bay Area and Central Valley, who came to meet with members of senior management, and learn about the Laboratory's recent accomplishments and directions of major research programs and missions.

It was also an opportunity for Laboratory and community leaders to learn more about each other and strengthen relationships.

JACQUELINE MCBRIDE/NEWSLINE

From left: Livemore school board members Tom McLaughlin and Rebecca Hudson and Livermore School District Superintendent Brenda Miller speak with Director Michael Anastasio during Thursday's Community Day.

"Interaction between the Lab and the community we live in is very important to us," Anastasio said. "We want our neighbors to be proud of what we do, and we want to continue to strengthen our connections with the community."

Anastasio outlined the many ways in which the Lab partners with the community including security and emergency planning, transferring technology to private industry, contracting with local businesses, interacting with educators and students and supporting local non-profit organizations through the annual campaign to "Help Others More Effectively," or HOME.

Anastasio cited examples of some of the connections LLNL technologies make to the community, including Lab-developed detection and sensing technologies for homeland security now bene-

See **COMMUNITY,** *page 5*

Nobel laureate Steven Chu named as new director of Lawrence Berkeley Lab

The University of California Board of Regents on Thursday named Steven Chu, professor in the physics and applied physics departments at Stanford University and a co-winner of the Nobel Prize in physics, as director of the UC-managed Lawrence Berkeley National Laboratory.

Steven Chu

Acting on the recommendation of UC President Robert Dynes and approval of Secretary of Energy Spencer Abraham, the regents appointed Chu the sixth director of the Berkeley laboratory during a special meeting conducted by telephone conference call. Chu will take office Aug. 1, replacing departing director Charles Shank. Shank will take a sabbatical and then return to the UC Berkeley campus to continue teaching and research.

"Steve Chu brings to this position outstanding leadership qualities and a record of superior achievement in science," Dynes said. "His combination of skills is precisely what we need to keep the Lawrence Berkeley National Laboratory at the forefront of scientific excellence and to guide the lab wisely through the upcoming potential contract competition."

LBL, *page 7*

Investigating board member discusses underlying causes of Columbia shuttle disaster

By Don Johnston
NEWSLINE STAFF WRITER

A lack of curiosity and failure to investigate the concerns of NASA engineers may have led to the accident that caused the space shuttle Columbia to break up upon re-entering the Earth's atmosphere Feb. 16, 2003, according to Nobel Laureate Douglas Osheroff, a member of the Columbia Accident Investigation Board.

Osheroff, a physicist at Stanford University, discussed the investigation board's report on the shuttle accident in a Laboratory presentation June 8 entitled, "Understanding the Columbia Shuttle Disaster."

COLUMBIA, *page 7*

New considerations needed for engineering

By Bob Hirschfeld
NEWSLINE STAFF WRITER

William E. Kastenberg

It's not enough to know how many rivets or struts are required when planning a new project. Engineers should include ethical considerations and societal impacts in their designs.

That's the advice from William E. Kastenberg of UC Berkeley's College of Engineering, who addressed LLNL's Center for Global Security Research last week.

Kastenberg says the world is moving from an age of "complicated" projects, such as space craft, jet aircraft, computers and the large-scale construction of dams, bridges and power plants, to one in which endeavors are "complex." These include information, bio- and nano-technologies, ecological systems and defenses against terrorism, among others.

"We are in an interconnected global community," Kastenberg said. "There is increasing uncertainty and complexity, not only in our technology, but also in our lives."

Therefore, he believes, it is necessary for an inward look when new projects are planned. Not only should engineers "focus on the factual" consequences such as bottom line revenues, but also the potential public health effects, environmental degradation and overall impact on society.

During his recent sabbatical year, Kastenberg and his wife traveled around the world, visiting the rainforests of Ecuador, studying philosophy in India and meeting with the Dalai Lama. The result was an appreciation of the ethical dilemmas posed

See **PLANNING,** *page 7*

LAB COMMUNITY NEWS

Weekly Calendar

Technical Meeting Calendar, page 4

Saturday 19

There will be a scheduled **power outage** today from 7 a.m. to 3 p.m. Bldgs. 230, 231, 232, 233, 234, 235 and Post 3C. Air conditioning, heating and elevators also will be affected. For more information, contact Mark Cardoza at 3-0490.

Tuesday 22

A **Fidelity retirement counselor** will be available on site today to assist with-assessing the current state of retirement accounts, learning how to plan asset allocation and diversify investments within retirement accounts, as well as identifying income strategies when planning retirement. Fidelity Mutual Funds are available to UC's workplace retirement plan participants in addition to the UC-managed investment pools. To set up a consultation, call 800-642-7131. When calling be sure to specify that you are an LLNL employee.

Wednesday 23

The Benefits Office will be making an encore presentation today **"Medicare, 65 and Still Working"** from noon-1 p.m. in Bldg. 571, room 1301. If you are age 65 or are approaching age 65 and are still working, come and find out how Medicare coordinates with your UC Health Plan. Space is limited. To register, call Lisa Payne, 3-0950.

Thursday 24

There is still space remaining to enroll in the **"Intermediate Investment Planning and Savings Training"** today in Bldg. 571, conference room 2301. Two sessions are available from 8:30 a.m.-noon or 1-4:30 p.m.. This half-day workshop is designed for those who wish to gain a more in depth analysis of investment modeling and asset allocation theory. If you are considering ways to position yourself to maximize your investment potential, you will want to attend this workshop. The cost is $45. To register, go to the Benefits Website at www.llnl.gov/llnl/02employment/benefits/seminars.htm.

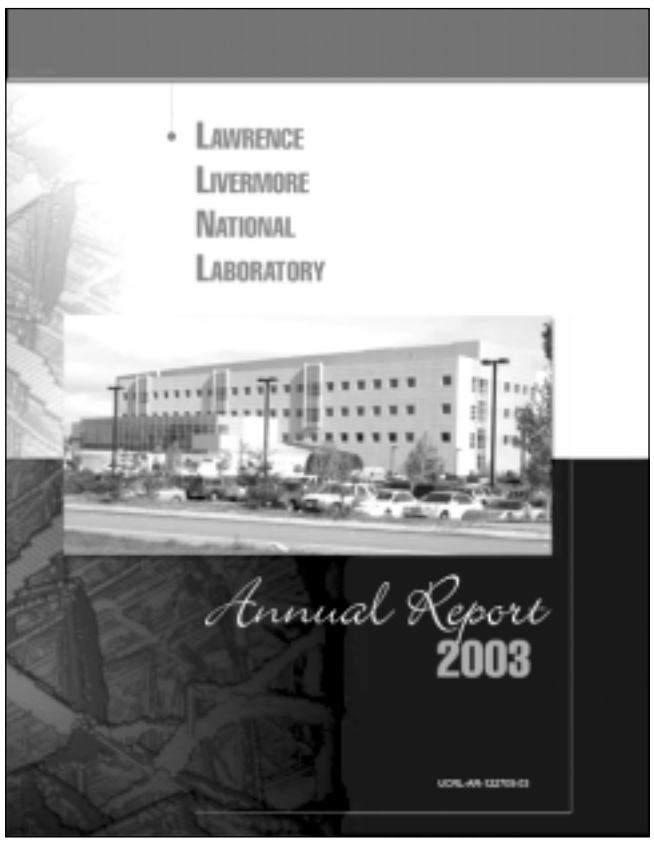
UP & COMING

The Radiochemistry Society will teach a course entitled "**The Fundamentals of Actinide Chemistry"** from June 28 – July 1 at the Marriott Courtyard Hotel, 3150 Garrity Way Richmond, Calif. The Radiochemistry Society faculty members that will be teaching this course not only hold Ph.D.s in radiochemistry, but also have more than 50 years of combined, hands-on experience with the chemical separation and measurement of actinides. This course will provide both theoretical as well as practical knowledge of the actinides. For more information, go the Website at http://www.radiochemistry.org/courses/rc_actinide.html .www.radiochemistry.org .

Lab annual report: It's in the mail

Copies of the Laboratory's "2003 Annual Report" will be distributed to employees via Lab mail next week. The report provides an overview of Laboratory activities and missions from last year.

In the report's introductory statement, Director Michael Anastasio remarks that "our exciting future is evident in this annual report, which highlights many of our significant accomplishments in 2003 and the direction of major research programs at Livermore. Our scientific and technological breakthroughs are meeting the important mission objectives of National Nuclear Security Administration (NNSA) andd other government sponsors...Exceptional people make Livermore an exceptional national laboratory."



The Laboratory's "2003 Annual Report" will be sent to employees via Lab mail next week.

The report features photographs from the November memorial service for the late Director Emeritus Edward Teller and quotes from individuals who spoke at the event.

The report goes on to describe the Lab's national security missions in stockpile stewardship, nonproliferation, and homeland security as well as research in energy, environment, human health and other areas of science and technology. Also included in the report is information on Lab operations, partnerships, award-winning research projects, and Lab people and programs.

The "2003 Annual Report" is available on the Web at http://www.llnl.gov/annual03/

IN MEMORIAM

Douglas DeLoach

Douglas DeLoach, known to friends as "Doug," died June 5. He was 43.

Born on a U.S. Air Force base on June 9, 1960, in Naha, Okinawa, Japan, DeLoach lived in Washington for many years before moving to Manteca in 1986.

An expert cabinetmaker, DeLoach collected and sold antiques. He also spent several years working with the developmentally disabled at the Laboratory.

Despite years of painful arthritis, he continued to enjoy woodworking, playing golf, gardening and spending time with his dog, Heidi. Family members said he was known to share his appreciation of what God had done in his life.

He was preceded in death by his brother, David DeLoach.

He is survived by his wife of 13 years, Laura DeLoach of Manteca, his parents, David DeLoach of Brentwood and Doris DeLoach of Manteca; his brothers, Dennis DeLoach of Salt Lake City and Dan DeLoach of Manteca; and his sister Donna Cookson of Ripon.

Services have been held.

James L. Cormier

James L. Cormier, a 36-year Pleasanton resident, died June 12. He was 87.

Born Aug. 10, 1916, in Minneapolis, he lived in Hayward for 21 years and Oakland for 24 years. He served in the U.S. Army during World War II and was stationed in India.

He retired from the Lab after working for 30 years as a mechanical technician. He was a member of SIRS, Tri-Valley Carvers and worked as a volunteer for Hope Hospice. His hobbies included fishing, camping and woodworking.

He and his wife, Marjorie, served as foster parents for 11 years.

He is survived by his wife of 59 years, Marjorie of Pleasanton; his son, James M. Cormier of Pleasanton; his daughters Carol Crosley of Silver City, NM; Susan Bernardi of Pacifica and Jean Geddings of Livermore; his sister Mary Cunningham of Oakland; four granddaughters and two great-grandchildren.

He was preceded in death by one grandson.

Memorial donations may be made to Hope Hospice, 6500 Dublin Blvd., Suite 100, Dublin, CA 94568.

Editor's note: Obituary information should be sent to newsline@llnl.gov or faxed to 2-9291.

Newsline

Newsline is published weekly by the Internal Communications Department, Public Affairs Office, Lawrence Livermore National Laboratory (LLNL), for Laboratory employees and retirees.

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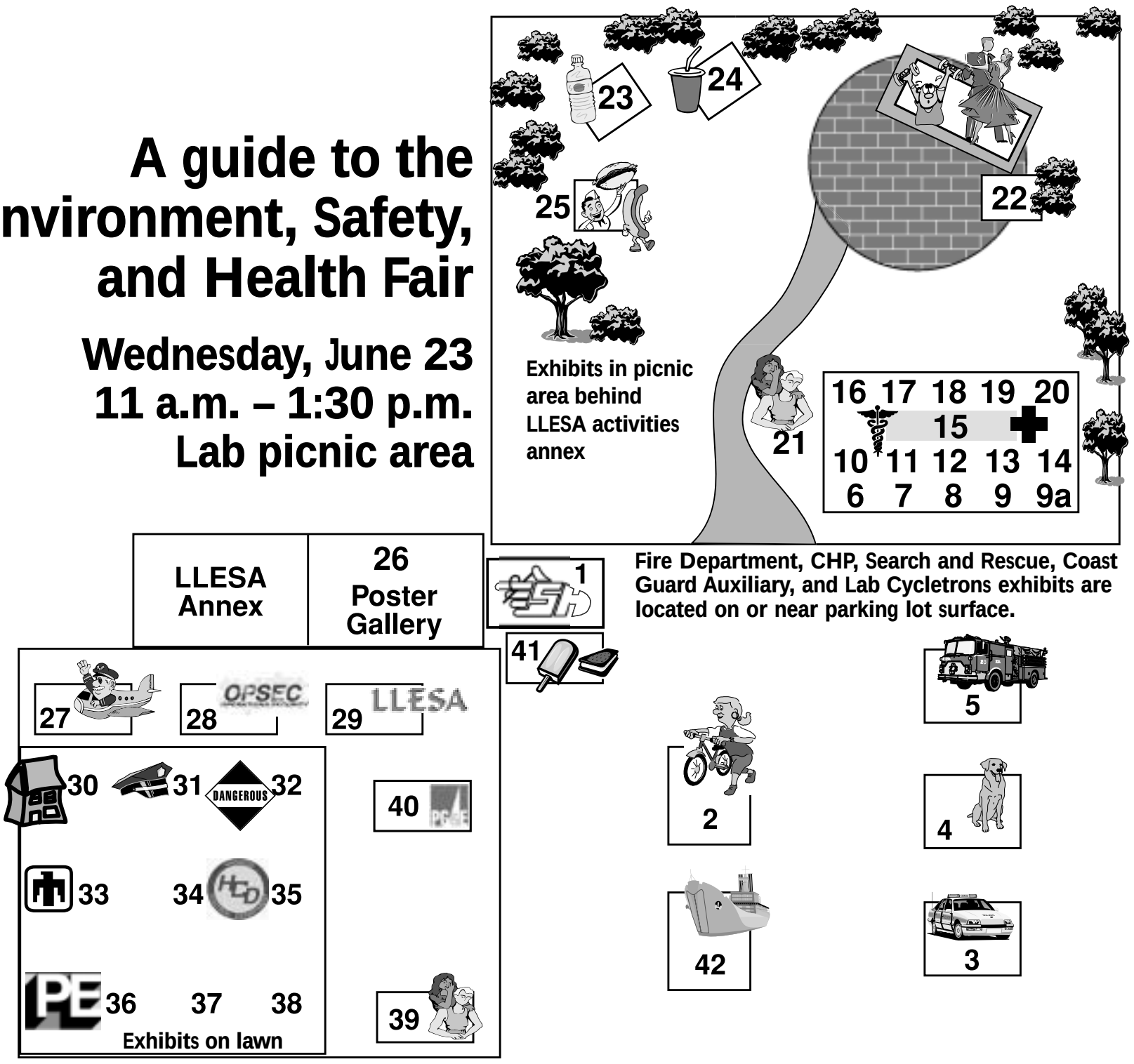
A guide to the Environment, Safety, and Health Fair

Wednesday, June 23
11 a.m. – 1:30 p.m.
Lab picnic area



1. Welcome table: Stop by to pick up a bag to carry your fair handouts and gifts.
2. Keep your bike safe: Get a free bicycle safety check courtesy of the Lab Cycletrons.
3. Safety on the roadways: The California Highway Patrol exhibit will cover road safety and feature a car rollover display plus offer a variety of handouts and give-away items.
4. Search and rescue demonstration: Three K-9 search and rescue teams from the Alameda County Sheriff's Department will discuss how they respond to calls, search techniques, equipment they use and how search dogs are handled. Also: survival skills plus instructions on what parents can tell children to do if they get lost.
5. Be fire-safety wise: Lab firefighters will discuss work and home fire safety; a Lab ambulance will be on display with paramedics on hand.
6 & 7. Office and non-office ergonomics: Representatives from Health Services and the Ergonomics Committee will demonstrate a variety of ways to protect against ergo injuries. Special ergonomic giveaways will be available.
8. Safety with computers: The Computer Resource Center will display a variety of computer equipment.
9. Safety glasses: Vision screenings will be conducted, vision ergonomics discussed, and safety glasses products and services demonstrated.
9a. Dental health: Printed materials on dental health, quiz board, games, give-aways.
10. Health programs: The Health Services Heart Health program will be described, along with other health services offered by the Lab.
11. Employee Assistance Program: Laboratory resources for coping with personal and work-related stress.
12. Stay healthy while traveling: Precautions to take while preparing for a trip and while traveling.
13. Sun safety: How to protect yourself while enjoying the summer sun. Sunscreen samples.
14. Energy Employees Occupational Illness Compensation Program: Information about compensation for DOE employees incurring cancer and beryllium disease.
15. Cancer prevention: LLNL/SNL Cancer Awareness campaign; Livermore Relay for Life; information and representatives of the American Cancer Society; testicular and breast cancer self-examination models; Kaiser dermatologist and esthetician; SNL services combined with Hope Hospice; Peacemakers LLNL Cancer quilt with supplies to make new squares.
16. General health information: Health Net representatives will be available; handouts provided.
17. Blood pressure check: Kaiser nurses will perform blood pressure checks.
18. Learn your body mass index: Blue Cross representatives will determine your body composition and body mass index.
19. Behavioral health: PacifiCare information on mental health services.
20. Cholesterol tests: Free tests by PacifiCare representatives.
21. Massage therapy: Get a free massage as you discover how relaxation helps prevent work stress. Offered by Health Net.
22. Live on-stage demonstrations: Fitness demonstrations at 11:30 a.m. and noon; social dancing at 12:30 p.m.; Tai Chi at 1 p.m.
23 & 24. Free cool drinks: Alhambra Water and Jamba Juice.
25. Food sales: Several Lab organizations will be cooking and selling lunch items including burgers, Chinese chicken salad, tri-tip, portabella mushroom sandwiches.
26. Poster gallery: Ten displays covering a variety of ES&H issues will be presented by Lab researchers, including heat stress, disposing of electronics, grassroots safety campaigns, pollution-prevention return on investment project and more.
27. Safety while traveling: Travel office personnel discuss World-Wide Assistance Program; safety with rental cars, at airports, and related topics.
28. Identity theft: Lab OPSEC people provide tips on how to protect your identity.
29. Recreation and fitness activities: Learn more about the many activities offered through LLESA, the Lab's employee services association.
30. Home and road safety: California Casualty will have information on home safety and highway accidents statistics.
31. Livermore Police Department: Topics covered include bike safety, driving under the influence of substances, proper installation of child car seats. How drinking impairs driving will be demonstrated.
32. Hazardous materials non-profit organization: Information about Academy of Hazardous Materials Managers; raffle, give-aways.
33. More home safety and raffles: Experts at this booth, organized by Sandia, will discuss carbon monoxide detectors and smoke alarms, and the Great American Home Safety Checklist; several raffles of home safety items.
34. Radiation safety: Hazards Control demonstration including examples of natural radiation.
35. Occupational safety: Hazards Control exhibit on occupational safety using principles of Integrated Safety Management (ISM).
36. Power tool safety: Plant Engineering (PE) people demonstrate tool safety for home woodworkers.
37. Electrical safety: PE demonstration of safety issues regarding high-voltage.
38. Wall penetration display: PE demonstrates correct way to penetrate a wall and hang things on walls. Do's and don'ts apply to work as well as home projects.
39. Massage therapy: Chair massages provided by Sandia.
40. Electrical and gas safety: PG&E displays focus on electrical safety and gas safety issues at home. A small exploding house is used in the gas demonstration.
41. Ice cream: Stop by for free refreshments.
42. Water safety: Water safety display presented by U. S. Coast Guard Auxiliary.

NEWS YOU CAN USE

JACQUELINE MCBRIDE/NEWSLINE

Teller scholarships awarded

From left, Laura Gilliom, University Relations director, discusses a science display with graduates Lauren Tracy of Livermore High, Nicole Sadler of Granada High and Kelly Bowers, director of Curriculum and Special Projects, Livermore Valley Joint Unified School District, during a visit to the Lab's Discovery Center. Both graduates received $500 scholarships as part of the Edward Teller Science Scholars Award, created this year in honor of Dr. Teller.

Summer Student Calendar

Seminars, panels and other activities are now in full swing for summer student employees. Go to the Student Bulletin Board at http://education.llnl.gov/ sbb/ for details and to register for events.

Tuesday 22

Seminar — DNA Sequence Alignment with Uncertainty, by David Hysom, Center for Applied Scientific Computing (CASC). 1:30 p.m., Bldg. 319, room 205. Contact: Paula Ashley, 3-3691.

Wednesday 23

Panel — Women in Science: Career Challenges. 10:30 a.m. to noon, Bldg. 543 auditorium. Contact: Karen Lema-Crow, 2-6233.

Thursday 24

Seminar — Mathematical and Computational Modeling of Multiphysics Couplings, by Mary Wheller, University of Texas at Austin.10:30 a.m., Bldg. 543 auditorium. Note: This seminar is part of the Institute for Terascale Simulation (ITS) Distinguished Lecture Series. Contact: Char Paul, 3-5424.

Speaker and ice cream social. Lab pool/picnic area. 2:30 p.m. Contact: Joanna Allen, 3-9225.

Please send your summer student calendar items to lucchetti1@llnl.gov

Technical Meeting Calendar

Monday 21

DIRECTOR'S DISTINGUISHED LECTURER SERIES

"Cosmic Acceleration: New Gravitational Physics or Mysterious Dark Energy" by Michael S. Turner, University of Chicago. 3:30 p.m., Bldg. 123 auditorium. Contact: Mona Garcia, 2-5214

CHEMISTRY & MATERIALS SCIENCE/MATERIALS SCIENCE & TECHNOLOGY DIVISION

"Energy, Configurational Forces and Characteristic Lengths Associated with the Continuum Description of Geometrically Necessary Dislocations," by Sinisa Mesarovic, Washington State University. 1:30 p.m., Trailer 2475, room 108 (controlled area). Contact: Tom Arsenlis, 4-2584, or Linda Jones, 3-8839.

Tuesday 22

BIOSECURITY & NANOSCIENCES LABORATORY

"Introducing a Gas-Phase Ion Mobility Separation into the LC-MS Analysis of the Human Plasma Proteome," by David Clemmer, Indiana University. 2 p.m., Bldg. 151, room 1209 Stevenson Room. Contact: Henry Benner, 2-7363, or Josie Morgado, 2-7181.

Thursday 24

ASCI INSTITUTE FOR TERASCALE SIMULATION

"Mathematical and Computational Modeling of Multiphysics Couplings," by Mary Fanett Wheeler, The University of Texas at Austin. 10:30 a.m., Bldg. 543 auditorium. Contact: Carol Woodword, 4-6013, Jim McGraw, 2-0541, or Char Paulo, 3-3730.

CHEMISTRY & MATERIALS SCIENCE /MATERIALS SCIENCE & TECHNOLOGY DIVISION SEMINAR

"Sensing with Biomagnetics: from Beads to Bacteria," by Lloyd Whitman, Naval Research Laboratory. 10 a.m., Bldg. 235, Gold Room. Refreshments will be served at 9:50 a.m. Contact: Tom Felter, 2-8012, or Rebecca Browning, 2-5500.

July 1

PHYSICS AND ADVANCED TECHNOLOGIES/N DIVISION

"The Level Density and Radiative Strength Function Using the Statistical Gamma-ray Spectroscopy," by Undraa Agvaanluvsan, North Carolina State University. 1:30 p.m., Bldg. 211, room 227, badge required. Contact: John Becker, 2-9676.

July 12

CHEMISTRY & MATERIALS SCIENCE/MATERIALS SCIENCE & TECHNOLOGY DIVISION

"Oxide/Semiconductor Integration for Electronics Applications," by applicant Rhett T. Brewer, Rutgers University. 10 a.m., Bldg. 151, Stevenson Room 1209. Contact: Wayne King, 3-6547, or Rebecca Browning, 2-5500.

The deadline for the next Technical Meeting Calendar is noon, Wednesday.

COMMUNITY

Continued from page 1

fiting Bay Area agencies such as the Port of Oakland, BART and the San Francisco Airport.

In reminding the audience of the Laboratory's mission, Anastasio explained that "LLNL provides an important resource to the nation not only through execution of its core defining national security mission, but through its innovative applied science and technology contributions, recognizing that our missions are accomplished only because of the Laboratory's talented workforce — our greatest asset. We are committed to simultaneous excellence in science and technology and in operations and business."

Anastasio reported that due to prompt response from a dedicated, focused workforce and management changes, security incidents were overcome, noting that a recent DOE review assigned their top rating to all aspects of security.

Anastasio concluded his presentation by updating the audience on DOE's recent decision to extend the University of California contract to manage LLNL for at least another two years. "Our job over the next few years will continue to focus on helping the nation by continuing our strong role in national security, continuing to carry out great science, engineering, and technology, and be a best in class Laboratory," he said.

Wayne Shotts, who heads the Lab's Homeland Security Organization, further expanded on Lab programs, explaining LLNL's important role in homeland security locally and on the national level.

Ed Moses, project manager of the National Ignition Facility, gave an overview of NIF, emphasizing its importance not only to national security, but to energy research and basic science. He awed the audience with the extraordinary scale of the project both as a grand challenge of science and as a tremendous construction project effort, peppering his talk with short videos of the laser's construction and test shots.

JACQUELINE MCBRIDE/NEWSLINE

The Lab's Dan Dietrich shows off a radiation detector to Joan Seppala, publisher of the *Independent,* and William Cody, assistant fire chief from the Newark Fire Depratment during Thursday's Community Day.

Following the presentations in the Bldg. 123 auditorium, Anastasio took questions from the audience, inviting members from senior management to come up and provide answers. Questions ranged from worker safety to terrorist threats to detailed scientific issues, such as water initiatives and biological research.

With the talks completed, community guests then boarded buses to tour Lab facilities. Tour stops included the Advanced Simulation and Computing Program, Homeland Security, the Forensic Science Center, the National Atmospheric Release Advisory Center, the Center for Accelerator Mass Spectrometry and the Biology and Biotechnology Research Program.

JACQUELINE MCBRIDE/NEWSLINE

JACQUELINE MCBRIDE/NEWSLINE

At left, Forensic Science Center Director Glenn Fox displays a Gas Chromatograph-Mass Spectrometer (GCMS) to visitors during Community Day. Above, William Cody, Newark Fire Department assistant fire chief, chats with with Energy and Environment Associate Director C.K. Chou and Wayne Shotts, director of the Laboratory's Homeland Security Office.

FRANK UHLIG/TID

Community Leader Day on TV

Want to know more about Community Leader Day? Community cable Channel 26 taped the morning presentations and will broadcast them beginning Saturday. Broadcasts are scheduled Saturday through Wednesday, June 19-23, at 5:30 p.m.; additional broadcasts will be added.

Making an impression

Feedback from community guests was extremely positive. They appreciated the opportunity to visit with Lab senior management. Guests also reported that what they learned was useful and provided a broader view of the Lab programs and its relationship to the local community.

"This is the first time I've been to the Lab, so for me it was very enjoyable...well organized and very informative," said David Berger, of the City of San Ramon. "In fact, some of the information shared at the morning briefing — on water initiatives — I will share with some colleagues interested in the same issues."

Christine Salidivar, of the Pleasanton Downtown Association, was particularly interested in the Lab's interactions with the community. "The morning briefings were fantastic, especially the information about your interactions with the local communities. I'd like to hear even more about that, next time."

"I loved it," added Mark Tarte, an instructor at Los Positas College who teaches in the Administration of Justice Department. Tarte was especially pleased with his tour of the National Atmospheric Release Advisory Center and the Forensic Science Center. "The forensics tour was especially fascinating because I'm trying to teach a forensic track program."

Pamela Ott, economic development director for the City of Pleasanton, found the visit "really informative. It was a great opportunity to get out and explore the Lab. I'm impressed by the breadth of things that go on here."

For Julia Orvis, of the Livermore Valley Joint Unified School District, it's important to educate the community about what the Lab is doing. "It was excellent. The briefings were a fantastic way to get a fast overview of what's going on at the Lab, and then we were able to follow it up with a detailed walk-through of some of the programs."

Former journalist and longtime observer of the Lab, Tom Riley of the Cal Rad-Board of Directors, was "overwhelmed" by the changes he saw at the Lab.

"I was a science reporter for the *Oakland Tribune* when they set aside the property to create the Laboratory. I knew Edward Teller and Ernest Lawrence really well, when they were in their early careers," Riley said. "I'm just swept off my feet when I look at it (the Lab) now. When I see what's here now I can't believe my eyes — the level of science is overwhelming, it's just mind-boggling."

Denise Irvin, executive assistant to the deputy superintendent for the San Joaquin County Office of Education, was impressed with the homeland security technologies demonstrated. "The tours were very informative. I'm impressed that there are technologies like this under development to protect the country."

John Knezovich of the Center for Accelerator Mass Spectrometry explains how the system works to Dixie and Cal Wood, far left, of the Valley Study Group, retiree T.J. Gilmartin, Tom Brengle of LLNL, Livermore Economic Development Director Kevin Roberts and Tom Riley of the Cal Rad board of directors.

New wireless network may cut through the 'fog of war'

By Charles Osolin
NEWSLINE STAFF WRITER

From the mountains of Afghanistan to the city streets of Iraq, U.S. military forces increasingly rely on high-tech devices to answer three key questions: "Where am I?" "Where are my buddies?" "Where's the enemy?" Timely answers to these questions are the key to success on the modern battlefield, allowing commanders to stay one step ahead of their adversaries.

As the demand for more and better information increases, both the number and type of modern information systems is growing rapidly. These systems produce an overwhelming amount of data, much of it routine or "housekeeping" in nature. To be fully useful in combat, the systems must perform such housekeeping functions automatically — organizing, monitoring and repairing themselves in the background, without human intervention, so commanders can focus their effort on fighting and winning the battle.

In addition, the wealth of information generated in this new electronic environment — by satellites, unmanned aircraft, ground vehicles and submarines, ground sensors and troops in the field — must be pulled together and sent over a secure, reliable and accessible communications network for delivery in time to help shape the battle.

Progress in developing just such "self-forming, self-healing" wireless networks was described last week at a Laboratory seminar presented by the Naval Postgraduate School's Center for Defense Technology and Education for Military Services.

NPS professors Dave Netzer and Alex Bordetsky and graduate student Chris Manuel told of their efforts to integrate a wide range of electronic technologies to form a Surveillance and Target Acquisition Network (STAN) for use by forces of the U.S. Special Operations Command. The system, the topic of Manuel's graduate thesis, is being tested at the NPS facility at Camp Roberts, Calif., north of San Luis Obispo.

JACQUELINE MCBRIDE/NEWSLINE

From left: NPS graduate student Chris Manuel and NPS professors Alex Bordetsky and Dave Netzer discuss the impact of network information systems on combat.

Manuel said the project's goal is to achieve "real-time situational awareness" for troops in combat using compact, lightweight "field computing devices" called Rovers — military versions of the ubiquitous personal digital assistants, or PDAs, used by civilians. The devices will be able to access satellite data, live video from unmanned aircraft such as the Predator and other unmanned vehicles, data from unattended acoustic and seismic ground sensors, automatic target recognition software, and even "cognitive blending/modeling" simulations used to gain insights into an enemy's thinking and behavior.

Netzer said the project began two years ago as an effort to improve the military's ability to rescue downed pilots. It has since grown into a combat-oriented program that will enable soldiers to "find, fix and identify" enemy personnel and equipment with greater precision from further away — while also avoiding U.S. casualties from "friendly fire."

Manuel demonstrated another capability that could prove useful in dealing with insurgencies, such as the clashes now occurring in Iraq. A soldier equipped with goggles containing a miniature video camera can scan a crowd of demonstrators and transmit the images to a command post, where facial recognition software or informants can spot known insurgency leaders.

"In effect, it makes every operator a sensor," he said.

Tawny Koncher of the Lab's National Security Office said the STAN project is "a good example of how NPS students bring practical experience and real military problems to the NPS research faculty, and how NPS adapts its R&D efforts to provide needed solutions." Manuel will graduate from NPS in July and plans to take the network into the field to continue its development and evaluation.

The seminar was the fourth in a series of reciprocal talks hosted by the Laboratory and the NPS after a memorandum of understanding between the two organizations was signed March 31. The next talk, "New Challenges for Radiation Detection Equipment for Homeland Security" by Arden Dougan, deputy director of the Laboratory's Radiation Detection Center, is scheduled for July 23 at the NPS campus in Monterey.

For more information, contact Harry Radousky of the University Relations Program at 2-4478.

Amigos Unidos organizes collection for victims of levee break

The Amigos Unidos Networking Group is coordinating with the San Joaquin County Chapter of the American Red Cross to collect food, clothing and other personal items for the more than 250 families that lost their homes and possessions in the recent Bacon Island levee break.

A collection point will be set up at the Laboratory's Discovery Center (Bldg. 651) near the East Gate. Items may be dropped off from noon to 1 p.m. Wednesday and Thursday, June 23 and 24, and June 30 and July 1.

Donation checks made out to the "American Red Cross" may be delivered to any of the following points of contact: Jessica Barraza, 2-6750, Bldg. 131; Rey Bocanegra, 3-5309, Bldg. 214; Susane Head, 2-5218, Bldg. 571; Michael T. Martin, 3-6580, Bldg. 411; Yahel de la Cruz, 4-3507, Bldg. 141 and Marta Holm, 2-8870, Bldg. 131.

Checks may also be sent directly to the American Red Cross, San Joaquin County Chapter, 747 N. Pershing Ave., Stockton, CA 95403.

One for the books

JACQUELINE MCBRIDE/NEWSLINE

Director Michael Anastasio, spoke on behalf of LLNL at the dedication ceremony for the new Civic Center Library in Livermore on Saturday, June 5. Anastasio donated four pieces of artwork that Kathy McCullough, left, and Bryan Quintard, right, created for the Tri-Valley Science and Engineering Fair. The artwork now hangs in the Children's Room.

Think about archives before tossing out Lab memorabilia

Are you cleaning out your office before you retire? Do you have files, research notebooks, photographs, memorabilia, meeting minutes, reports or other documents accumulated during your career at the Lab? Before you throw them out, think about becoming part of the LLNL's history.

The Records and Archives Group can help you decide which records should be kept for legal reasons or to preserve the Lab's history. For more information, call Maxine Trost, Laboratory archivist, 2-6539 (trost5@llnl.gov).

COLUMBIA

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After providing the broad scope of the investigation, Osheroff focused on the foam pad that ripped off the external fuel tank 82 seconds into the shuttle launch and struck the carbon shielding of Columbia's left wing.

"At first everything looked fine during the launch," he said. But an examination of the launch video showed something had come off — foam debris from the left bipod ramp of the external fuel tank. Investigators calculated the "strike velocity" of the foam at about 785 feet per second, or the same velocity as a slug exiting the barrel of a .45-caliber pistol, Osheroff said.

"Engineers were gravely concerned," he said, but NASA management dismissed the risk and headed off engineers' efforts to further investigate by examining satellite images of the shuttle flight.

The astronauts were informed of the incident, but the flight continued as scheduled.

It wasn't until after the accident and recovery of pieces of the shuttle and the "modular auxiliary data system recorder" that investigators went back to closely examine potential damage to the wing from the foam.

Recorded sensor data indicated hot gas began eating its way through the left wing and stress on the leading edge wing spar as Columbia was descending over Hawaii. "This suggested damage had been there even on orbit," Osheroff said.

By examining video and recovered pieces of the shuttle, investigators were able to identify the piece of reinforced carbon carbon (RCC #8) wing panel struck by the foam, he said. "The slag tells a story."

Extensive ballistic and materials experiments were conducted at Southwest Research in San Antonio, Texas, to determine if the foam could have caused the breach in the wing panel. Those experiments showed the foam would have struck the wing with a force equal to about 3,000 kilograms (or 6,600 pounds).

Other evidence turned up when investigators examining radar images of the flight noticed a small object traveling along with the shuttle on day two of the mission, an object about 10 inches square, most probably from a carbon wing panel, according to Osheroff.

JACQUELINE MCBRIDE/NEWSLINE

Douglas Osheroff

After seeing the results of experiments and investigators' findings "NASA people realized they had been completely wrong," he said.

Falling foam was not unique to the Columbia flight, but has occurred on numerous launches, including previous launches of Columbia, according to Osheroff, who added that falling foam had damaged a solid fuel rocket on the Space Transportation System (STS) 112 just two months before.

Osheroff personally conducted experiments on foam in a university laboratory and his own kitchen to determine conditions for cracking. "We showed NASA's model for why the foam shed to be completely wrong," he said.

Osheroff indicated part of the reason for the accident to be a lack of curiosity on the part of NASA's engineers, who felt they had neither the time nor the money to perform the necessary experiments. However, Osheroff's own experiments cost very little money and took only a couple of days to perform.

"NASA has never done quantitative risk analysis," he said, probably because NASA never was able to completely characterize the many subsystems that make up the shuttle system. "The loss of the orbiter and its crew happened because NASA decided not to investigate after launch," Osheroff said.

NASA management's "blind spot" was a "signal to noise problem" — management ignoring the concerns of NASA engineers regarding safety issues when evidence is not conclusive, because there are too many reports of risk, he said. NASA management also succumbed to schedule and cost pressures, said Osheroff, adding that the Space Transportation System is "the product of political compromises," was built with too little money and in too little time, and was sold to Congress as an inexpensive system.

"This is a very expensive system and the feeling of the (investigating) board is that it is without a clear national goal," he said. At the conclusion of his presentation, Osheroff said there's a need to clarify the future of the space program since President Bush announced the ambitious goal of a manned mission to Mars.

Osheroff fears NASA will abandon the International Space Station and the Hubble telescope. "The science community feels Hubble has been such a valuable tool."

He questioned the value of a manned flight to Mars, asking "Will there be a reason to send men to Mars by the time we have the technology to do so?" and "Will there be any exploration left to do?

"How does one assess the trade off between safety and achievement," Osheroff inquired. "We need more of a national dialogue on the future of human space flight, and I don't see that happening."

PLANNING

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by new technologies that are developing without precedent; those with little historical empirical data.

"We as engineers tend to look at the foreground," Kastenberg said. "We tend to miss the contextual background, something the world's wisdom traditions have focused on for several millenea."

He suggests engineers adopt a more holistic approach, shifting from the "economy of technology" to the "ecology of technology." And he recommends more transparency, in which technological planning and decision making is apparent and where the technical community is in dialogue with the public.

The final step is responsiveness, which Kastenberg defines as "going beyond responsibility and stewardship, but also being in a recursive relationship with society."

He and his colleagues at UC Berkeley are developing an engineering curriculum that will teach students how to shift from linear thinking to a nonlinear mindset far different from the one utilized for the past 300 years.

The program does not provide answers to the ethical dilemmas raised by new technologies. It is intended to encourage a new way of thinking and considering risks and ethics.

"The world has always been nonlinear," Kastenberg said. "But until now, we've been able to solve problems in a linear fashion. Now, things are more complex, and we need to deal with that fact."

LBL

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Chu, who earned his doctorate from UC Berkeley, is currently the Theodore and Francis Geballe Professor of Physics and Applied Physics at Stanford, where he has been on the faculty since 1987.

In 1997, Chu, 55, was awarded the Nobel Prize in physics with Claude Cohen-Tannoudji and William D. Phillips "for development of methods to cool and trap atoms with laser light." Beginning in 1989, Chu expanded his research scope to include polymer physics and biophysics at the single-molecule level.

"We are delighted that Dr. Steven Chu, a Nobel laureate, is returning to the University of California to become the next director of the Lawrence Berkeley National Laboratory," said Raymond Orbach, director of the DOE's Office of Science. "He is a world-class scientist and an inspiring leader and manager who is wonderfully qualified to guide Berkeley Lab into the future."

"I want to extend my personal congratulations to Steven Chu on his selection today as the sixth director of Lawrence Berkeley National Laboratory," said Livemore Laboratory Director Michael Anastasio. "Steve is a remarkable scientist and I look forward to working with him to build on the long history of collaboration between our laboratories."

While at Stanford, Chu chaired the physics department from 1990-1993 and again from 1999-2001. More than 20 of his students and postdoctoral fellows have become professors at top research universities around the world.

With three other professors, Chu initiated Bio-X, a campuswide initiative that brings together researchers from the physical and biological sciences with those from engineering and medicine. He went on to help plan the Bio-X program and its central laboratory, the recently constructed James H. Clark Center. He also played a key role in establishing and funding the Kavli Institute for Particle Astrophysics and Cosmology, another independent laboratory at Stanford.

From 1978-1987, Chu worked at AT&T Bell Laboratories in New Jersey. From 1983-1987, he became head of the quantum electronics research department within the Electronics Research Laboratory of AT&T Bell Labs. His director then was Charles Shank.

"Ironically, I succeed my former boss at Bell Laboratories, Charles Shank," Chu said. "Carrying on in the tradition of Ernest Lawrence, Chuck had the vision to see great opportunities and the energy and managerial skills to realize those visions."

In his spare time, Chu enjoys bicycling, swimming and cooking.

As director of Lawrence Berkeley National Laboratory, Chu will earn $350,000 annually and oversee an operation with a $521 million budget and a workforce of approximately 4,000. The director's salary, like that of all other UC employees at the laboratory, is paid from funds derived from the federal DOE contract. No general funds from the state are used to pay the director's salary.

Taking steps to protect yourself at work and home

OPSEC Program Office

Pam Poco

Did you know that using Operations Security (OPSEC) helps you protect your family? That's because OPSEC is used to identify how adversaries, such as criminals, get information that could be used to cause you harm. In the case of your family, the "harm" could come in a variety of forms, such as stealing your identity, burglarizing your home or automobile or jeopardizing your family's safety or well-being. Use the five steps described below to reduce your chances of becoming a victim.

Step 1: Identify the information you want to protect.

OPSEC usually starts by identifying the information you want to protect. For instance, you may have heard that you can reduce your chances of becoming a victim of identity theft by protecting your personal information, such as your social security number, mother's maiden name and the passwords you use. There are also a variety of personal numbers we recommend you protect, including your driver's license number, account numbers, access codes, and personal identifying numbers (or PINs). If you are concerned about burglaries, we recommend you protect information about an extended absence, such as when you are on vacation. Also, be aware of who knows when your children are home alone. In each case, you are identifying and protecting information that you don't want a criminal to know.

Step 2: Determine the threats.

Once you've identified the information you want to protect, evaluate whether there are threats that could directly impact you. In OPSEC, a threat is someone with both the intent and capability of causing you harm. Reading the newspaper, getting involved in neighborhood watch groups, watching the news or talking with your local police are ways to understand the threats that may impact you. Some community police departments have local newsletters that include information about various threats. Also, the University of California Police Department Office of Investigative Services (OIS) here at LLNL maintains a Website with several links that may be useful, including more information about identity theft and fraud schemes at http://www-r.llnl.gov/securityprogram/ ucpolice/index.html

Step 3: Evaluate your vulnerabilities.

The third step in OPSEC is to look at how you might be inadvertently or unintentionally making information that you want to protect available to your adversaries. Do you put unshredded documents containing personal information into your trash where they can be retrieved by a dumpster diver? Do you deposit your outgoing mail in the mailbox outside your home and put the little red flag up so that a thief can know there is something to steal? Do you have your checks delivered to an unsecured mailbox where they can be stolen? Do you let your mail and newspapers pile up when you go on vacation? Do you leave packages visible in your car when you go shopping? Do you maintain a personal Website with information that could be used to the detriment of your family? Sometimes it's helpful to think like a "bad guy." What would you look for, and where would you look if you wanted to victimize yourself?

Step 4: Estimate the risks.

There are two components to risk — impact and probability. It is often very difficult to estimate probability — none of us ever expects to become a victim. So consider how much damage could be done should your information fall into the wrong hands. Evaluate the impact of becoming a victim by asking yourself these questions: Are you willing to accept the risk of someone stealing your identity, ruining your credit and committing crimes using your name? If a burglar managed to break into your home, do you have irreplaceable items that might be stolen? Can you bear the thought of criminals knowing that your children are home alone each day after school? This step helps you determine how much effort you want to make to reduce your risk of becoming a victim.

ISSM
Integrated Safeguards & Security Management

Step 5: Implement countermeasures.

Finally, identify cost-effective countermeasures you want to use to protect your information. These changes can be inexpensive and relatively nonintrusive, but can have a big payoff. Consider putting your personal information through a shredder before it goes into the trash. Consider having your next batch of checks printed without your driver's license and arrange to pick them up at your bank. Consider using LLESA's package receiving service at the Time Zone (Trailer 4128) instead of having a package delivered to you when you're not at home. Think about using your trunk when storing packages in your car. If you don't have a trunk, carry a blanket that matches your car's interior and cover the packages to make them less obvious. We recommend you minimize the personal information you discuss on a cell phone, especially given how easily cell phone conversations can be intercepted. Learn to be wary about unsolicited telephone calls asking for your business, especially if someone makes you an offer that sounds too good to be true. We also recommend you discourage businesses from using your social security number for identification purposes. These are all easy, inexpensive examples of countermeasures to help reduce your chances of becoming a victim of crime.

These steps don't have to be used sequentially. In fact, some people like to start by determining the threat before they identify what they want to protect. The important point is that you use all of the steps regularly because as long as you have information you want to protect, OPSEC can help you protect it.

Most people already use OPSEC, but call it something else. OPSEC is actually just good, common sense. Want to know more? Stop by the OPSEC Booth at the Lab's Safety Fair next Wednesday (June 23) and we'll be glad to fill you in, or call the OPSEC Program Office, 2-5000.

Homeland security visit

JACQUELINE MCBRIDE/NEWSLINE

Maureen McCarthy (right), director of the Office of Research and Development for the Department of Homeland Security's Science and Technology Directorate, and Gerry Parker, director of the DHS's Science-based Threat Analysis and Response Program, visited the Laboratory on Tuesday and Wednesday. They reviewed programs and met with DHS undergraduate and graduate students working for the summer at LLNL and Sandia. Shown are graduate students Brigitte Fischer of the University of Wisconsin-La Crosse and Asher Sinensky of the Massachusetts Institute of Technology, who are both working at LLNL.

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